RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number:	09/890836B
Source:	
Date Processed by STIC:	

ENTERED

CRF Errors Edited by the STIC Systems Branch

Number: 09/890,836B	CRF Edit Date: 07-25-6 Edited by:
Realigned nucleic acid/amino acid number text "wrapped" to the next line	rs/text in cases where the sequence
Corrected the SEQ ID NO. Sequence nun	nbers edited were:
	<u> </u>
Inserted or corrected a nucleic number at NO's edited:	the end of a nucleic line. SEQ ID
Deleted: invalid beginning/end-of-file	text; page numbers
Inserted mandatory headings/numeric ide	ntifiers, specifically:
Moved responses to same line as heading/r	numeric identifier, specifically:
Other: Inserted line emplenation	n fos Seg ID#s (4-7)



IFW16

RAW SEQUENCE LISTING DATE: 07/25/2005
PATENT APPLICATION: US/09/890,836B TIME: 11:20:35

Input Set : A:\pto.kd.TXT

4 <110> APPLICANT: Andrew Bett

Output Set: N:\CRF4\07252005\I890836B.raw

```
Volker Sandig
              Rima Youil
      8 <120> TITLE OF INVENTION: IMPROVED HELPER DEPENDENT VECTOR SYSTEM
              FOR GENE THERAPY
     11 <130> FILE REFERENCE: 20377YP
     13 <140> CURRENT APPLICATION NUMBER: US 09/890,836B
     14 <141> CURRENT FILING DATE: 2001-08-03
     16 <150> PRIOR APPLICATION NUMBER: PCT/US00/02405
     17 <151> PRIOR FILING DATE: 2000-01-31
     19 <150> PRIOR APPLICATION NUMBER: 60/138,134
     20 <151> PRIOR FILING DATE: 1999-06-08
     22 <150> PRIOR APPLICATION NUMBER: 60/118,601
     23 <151> PRIOR FILING DATE: 1999-02-04
     25 <160> NUMBER OF SEQ ID NOS: 17
     27 <170> SOFTWARE: FastSEQ for Windows Version 4.0
     29 <210> SEQ ID NO: 1
     30 <211> LENGTH: 15
     31 <212> TYPE: DNA
     32 <213> ORGANISM: Artificial Sequence
     34 <220> FEATURE:
     35 <223> OTHER INFORMATION: Consensus sequence
W--> 37 <221> NAME/KEY: misc_feature
     38 <222> LOCATION: (1)...(15)
     39 <223> OTHER INFORMATION: n = A, T, C or G
W--> 41 <400> 1
                                                                            15
W--> 42 atttgnnnnn nnncg
     44 <210> SEQ ID NO: 2
     45 <211> LENGTH: 10
     46 <212> TYPE: DNA
     47 <213> ORGANISM: Artificial Sequence
     49 <220> FEATURE:
     50 <223 > OTHER INFORMATION: Adenovirus 5
     52 <400> SEOUENCE: 2
                                                                                 10
     53 attttgtgtt
     55 <210> SEQ ID NO: 3
     56 <211> LENGTH: 10
     57 <212> TYPE: DNA
     58 <213> ORGANISM: Artificial Sequence
     60 <220> FEATURE:
     61 <223> OTHER INFORMATION: Consensus sequence
     63 <400> SEQUENCE: 3
                                                                                 10
     64 attttgttgt
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Input Set : A:\pto.kd.TXT

Output Set: N:\CRF4\07252005\1890836B.raw

66 010 070 70 70 70						
66 <210> SEQ ID NO: 4						
67 <211> LENGTH: 158						
68 <212> TYPE: DNA						
69 <213> ORGANISM: Artificial Sequence						
71 <220> FEATURE:						
72 <223> OTHER INFORMATION: Synthetic packaging signal						
74 <400> SEQUENCE: 4						
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76 gggccgagta agatttgacc gtttacgcgg ggactttgaa taagagcgag tgaaatctga	120					
77 ataattttgt tgtactcata gcgcgtaatc tctagacg	158					
79 <210> SEQ ID NO: 5						
80 <211> LENGTH: 158						
81 <212> TYPE: DNA						
82 <213> ORGANISM: Artificial Sequence						
84 <220> FEATURE:						
85 <223> OTHER INFORMATION: Adenovirus 5						
87 <400> SEQUENCE: 5						
88 gtacacagga agtgacaatt ttcgcgcggt tttaggcgga tgttgtagta aatttgggcg	60					
89 taaccgagta agatttggcc attttcgcgg gaaaactgaa taagaggaag tgaaatctga	120					
90 ataattttgt gttactcata gcgcgtaatc tctagacg	158					
92 <210> SEQ ID NO: 6						
93 <211> LENGTH: 65						
94 <212> TYPE: DNA						
95 <213> ORGANISM: Artificial Sequence						
97 <220> FEATURE:						
98 <223> OTHER INFORMATION: Linker						
100 <400> SEQUENCE: 6						
101 ageteggeeg attattggeg egecagatet geggeegett etagaaaege gtgaattegg	60					
102 cgcca	65					
104 <210> SEQ ID NO: 7						
105 <211> LENGTH: 65						
106 <212> TYPE: DNA						
107 <213> ORGANISM: Artificial Sequence						
109 <220> FEATURE:						
110 <223> OTHER INFORMATION: Linker						
112 <400> SEQUENCE: 7						
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114 ggccg	65					
116 <210> SEQ ID NO: 8						
117 <211> LENGTH: 40						
118 <212> TYPE: DNA						
119 <213> ORGANISM: Artificial Sequence						
121 <220> FEATURE:						
122 <223> OTHER INFORMATION: PCR Primer						
124 <400> SEQUENCE: 8						
125 attggcgcgc cttctttctg ggatgattca gcatcaactc	40					
127 <210> SEQ ID NO: 9						
128 <211> LENGTH: 41						
129 <212> TYPE: DNA						

Input Set : A:\pto.kd.TXT

Output Set: N:\CRF4\07252005\1890836B.raw

130 <213> ORGANISM: Artificial Sequence 132 <220> FEATURE: 133 <223> OTHER INFORMATION: PCR Primer 135 <400> SEQUENCE: 9 41 136 gatcgtcggc cgcttgggtc atagacttct ttgagaacca g 138 <210> SEQ ID NO: 10 139 <211> LENGTH: 41 140 <212> TYPE: DNA 141 <213> ORGANISM: Artificial Sequence 143 <220> FEATURE: 144 <223> OTHER INFORMATION: PCR Primer 146 <400> SEQUENCE: 10 147 atcagttagc ggccgcacaa gctaagatca caaagctgtt t 41 149 <210> SEQ ID NO: 11 150 <211> LENGTH: 37 151 <212> TYPE: DNA 152 <213> ORGANISM: Artificial Sequence 154 <220> FEATURE: 155 <223> OTHER INFORMATION: PCR Primer 157 <400> SEQUENCE: 11 37 158 tatggcgcgc cgctgacacc cagcctgggt gccggtg 160 <210> SEQ ID NO: 12 161 <211> LENGTH: 39 162 <212> TYPE: DNA 163 <213> ORGANISM: Artificial Sequence 165 <220> FEATURE: 166 <223> OTHER INFORMATION: PCR Primer 168 <400> SEQUENCE: 12 39 169 tcgacgcgta gcgctgtgtg gccttggcag tttccatag 171 <210> SEO ID NO: 13 172 <211> LENGTH: 45 173 <212> TYPE: DNA 174 <213> ORGANISM: Artificial Sequence 176 <220> FEATURE: 177 <223> OTHER INFORMATION: PCR Primer 179 <400> SEQUENCE: 13 45 180 tcagtaatgc ggccgcggga tcattcctgg actcagattg ttctg 182 <210> SEQ ID NO: 14 183 <211> LENGTH: 41 184 <212> TYPE: DNA 185 <213> ORGANISM: Artificial Sequence 187 <220> FEATURE: 188 <223> OTHER INFORMATION: PCR Primer 190 <400> SEQUENCE: 14 41 191 tattaaggcg ccgggcatgg gagtgatctc accaactctg g 193 <210> SEQ ID NO: 15 194 <211> LENGTH: 46 195 <212> TYPE: DNA 196 <213> ORGANISM: Artificial Sequence

Input Set : A:\pto.kd.TXT

Output Set: N:\CRF4\07252005\I890836B.raw

198	<220> FEATU	JRE:					
199	<223> OTHER	R INFORMATIO	ON: PCR Prin	ner			
201	<400> SEQUE	ENCE: 15					
202	tcgacgcgta	tttaaatgtg	ctggagtgtt	gagatactgt	agtggt		46
204	<210> SEQ 1	ID NO: 16					
205	<211> LENGT	TH: 28068					
206	<212> TYPE:	: DNA					
207	<213> ORGAN	NISM: Artif:	icial Sequer	nce			
	<220> FEATU		_				
210	<223> OTHER	R INFORMATIO	ON: Modified	d adenovirus	5		
212	<400> SEQUE	ENCE: 16					
213	aaacatcatc	aataatatac	cttattttgg	attgaagcca	atatgataat	gagggggtgg	60
			gcgtgggaac				120
			ggaacacatg				180
			caggaagtga				240
			gagtaagatt				300
			tttgtgttac				360
			tggagactcg				420
			tttgattcgg				480
			ctccacagaa				540
			aatttggggg				600
			cctggcttga				660
			ttcatcagca	-			720
			cacccccac				780
			gctgaggaat				840
			acaacaacca				900
			ttttaggact				960
			ttcaccagaa				1020
			ataacttcat				1080
			aagagccctg				1140
			cagctggaag				1200
			ctctcctgct				1260
			agtggagaag				1320
			tattgcaata				1380
			tcagtagata				1440
			ttgagcattt				1500
			atctgtataa				1560
			gccaatgagg				1620
			gagcaggatg				1680
							1740
			tggaggtgtg				1800
			gaaacttaaa				1860
			cctccggaca				1920
			cctaactacc				
			acaacaaagt				1980
			ggatttcttt				2040
			atggggtggt				2100
			agctccagtt				2160
			caatggacag				2220
250	taactttaaa	taccatttta	tagccacact	ggagttttga	agacctcaat	acgcaaatat	2280

Input Set : A:\pto.kd.TXT

Output Set: N:\CRF4\07252005\I890836B.raw

			gtctgctcca				2340
252	gcttatttgt	agagaactga	agcattttaa	gcttttgctc	aggaatccct	ggtagcttcc	2400
253	tgtgacttgc	aagatattag	tgatgggtca	agaaacagga	cccccatca	gcataacata	- 2460
254	cgcagtgcct	cagtagtcca	tcaggcagaa	aaaactgcag	atggcacatg	gaaatgacca	2520
255	gcggcggaag	ataccccgac	agtgtgggca	gttctatttc	agcagcaatc	aagagggggc	2580
256	ctggagccac	tcaatcaagt	ggagcaggat	gggagcaagc	actgtgcaga	ccaatgcaat	2640
257	ccccagttaa	cacaaaaaat	aaataaaaga	gatgagattc	agtctcttga	ctgtgactga	2700
258	ctgggagctt	tatagctgat	gcttgtgtct	tttctccatt	ttatttaatt	aggaaaagaa	2760
			gtgtgaggta				2820
260	tttcaacttc	tagaagtttc	taaacataag	gtaaatccat	ctttgtcctt	gggatcactg	2880
261	cacatctcag	aaaggcaaat	aaatcagtaa	ttggtgggca	taattactag	ctcatggact	2940
262	gacaaggtct	acactatttc	gaatctcaca	gaagtaagcc	atgggacaga	tagagtctga	3000
263	tagtggtgcc	ccgtttcctg	gaggtcacac	ttactcatcc	ccctggaccc	tgggcttctc	3060
			tggaaccagg				3120
265	ctccaatggc	tcgcaccaag	actagagatg	caagtgcaag	cacatccacc	ctctcagcag	3180
			tgtcacgtac				3240
			ggtcggccct				3300
			attgtactct				3360
			gcctctcttt				3420
		_	ctgggccaag				3480
			caaagggctc				3540
			tgatgttcta				3600
			ggataaacac				3660
			tttcaatgct				3720
			ggtgaaaata				3780
			ctctgtgcac				3840
			atgggcttac				3900
			ccaagcaacc				3960
			tcaggtgctc				4020
			ctctgtgcta				4080
			cccatagata				4140
			gactagattg				4200
			tttgcaaggt				4260
			tgacttaatc				4320
			ttactaacca				4380
			tgagtgtgtc				4440
	_		aacctccgtt				4500
			atagcccaaa				4560
			aatgcctcct				4620
			atgcaccggg				4680
		_	ttaccctact				4740
			taacaatgca				4800
			taagcatcac				4860
			gcgccagctc				4920
		-	ggctcttcac				4980
			ctgctgtccc				5040
			cctttgtttt		_	_	5100
			agccccaaga				5160
299	tagaatcgtt	ygaaaatgga	gaaaacagga	aatggcaaat	ggtttcagtg	accaggagga	5220

Input Set : A:\pto.kd.TXT

Output Set: N:\CRF4\07252005\1890836B.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; N Pos. 6,7,8,9,10,11,12,13

VERIFICATION SUMMARY

DATE: 07/25/2005 PATENT APPLICATION: US/09/890,836B TIME: 11:20:36

Input Set : A:\pto.kd.TXT

Output Set: N:\CRF4\07252005\1890836B.raw

L:37 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order! L:41 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:1

L:42 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:0

Raw Sequence Listing before editing, for reference only



IFW16

RAW SEQUENCE LISTING DATE: 07/19/2005 PATENT APPLICATION: US/09/890,836B TIME: 11:18:07 Input Set : A:\PTO.RJ.TXT Output Set: N:\CRF4\07192005\I890836B.raw 4 <110> APPLICANT: Andrew Bett Volker Sandig Rima Youil 8 <120> TITLE OF INVENTION: IMPROVED HELPER DEPENDENT VECTOR SYSTEM FOR GENE THERAPY 11 <130> FILE REFERENCE: 20377YP 13 <140> CURRENT APPLICATION NUMBER: US 09/890,836B 14 <141> CURRENT FILING DATE: 2001-08-03 16 <150> PRIOR APPLICATION NUMBER: PCT/US00/02405 17 <151> PRIOR FILING DATE: 2000-01-31 19 <150> PRIOR APPLICATION NUMBER: 60/138,134 20 <151> PRIOR FILING DATE: 1999-06-08 22 <150> PRIOR APPLICATION NUMBER: 60/118,601 23 <151> PRIOR FILING DATE: 1999-02-04 Does Not Comply 25 <160> NUMBER OF SEQ ID NOS: 17 Corrected Diskette Needed 27 <170> SOFTWARE: FastSEO for Windows Version 4.0 66 <210> SEQ ID NO: 4 67 <211> LENGTH: 158 68 <212> TYPE: DNA 69 <213> ORGANISM: Artificial Sequence 71 <220> FEATURE: 72 <223> OTHER INFORMATION: Synthetic packaging signal 74 <400> SEQUENCE: 4 inden E--> 75 gtacacagga agtgactttt aacgcgcggt ttgttacgga tgttgtagta aatttgtcta W--> 76 60 gggccgagta agatttgacc gtttacgcgg ggactttgaa taagagcgag tgaaatctga Same 158 E--> 77 (120) taattttgt tgtactcata gegegtaatc tctagacg 79 <210> SEQ ID NO: 5 80 <211> LENGTH: 158 81 <212> TYPE: DNA 82 <213> ORGANISM: Artificial Sequence 84 <220> FEATURE: 85 <223> OTHER INFORMATION: Adenovirus 5 87 <400> SEQUENCE: 5 E--> 88 gtacacagga agtgacaatt ttcgcgcggt tttaggcgga tgttgtagta aatttgggcg W--> 89(60<u>t</u>aaccgagta agatttggcc attttcgcgg gaaaactgaa taagaggaag tgaaatctga 158 E--> 90 (120ataattttgt gttactcata gcgcgtaatc tctagacg 92 <210> SEQ ID NO: 6

93 <211> LENGTH: 65 94 <212> TYPE: DNA

5

6

ERRORED SEQUENCES

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/890,836B

DATE: 07/19/2005 TIME: 11:18:07

Input Set : A:\PTO.RJ.TXT

Output Set: N:\CRF4\07192005\1890836B.raw

95 <213> ORGANISM: Artificial Sequence

97 <220> FEATURE:

98 <223> OTHER INFORMATION: Linker

100 <400> SEQUENCE: 6

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E--> 102(65)

104 <210> SEQ ID NO: 7

105 <211> LENGTH: 65

106 <212> TYPE: DNA

107 <213> ORGANISM: Artificial Sequence

109 <220> FEATURE:

110 <223> OTHER INFORMATION: Linker

112 <400> SEQUENCE: 7

W--> 113 agcttggcgc cgaattcacg cgtttctaga agcggccgca gatctggcgc gccaataatc

E--> 114 65

RAW SEQUENCE LISTING ERROR SUMMARY DATE: 07/19/2005
PATENT APPLICATION: US/09/890,836B TIME: 11:18:08

Input Set : A:\PTO.RJ.TXT

Output Set: N:\CRF4\07192005\1890836B.raw

Invalid Line Length:

The rules require that a line not exceed 72 characters in length. This includes spaces.

Seq#:6; Line(s) 101
Seq#:7; Line(s) 113

VERIFICATION SUMMARY

DATE: 07/19/2005 PATENT APPLICATION: US/09/890,836B TIME: 11:18:08

Input Set : A:\PTO.RJ.TXT

Output Set: N:\CRF4\07192005\I890836B.raw

L:37 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order! L:41 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:1 L:42 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:0 L:75 M:254 E: No. of Bases conflict, LENGTH:Input:0 Counted:60 SEQ:4 L:76 M:334 W: (2) Invalid Amino Acid in Coding Region, NUMBER OF INVALID KEYS:6 L:77 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:4 M:254 Repeated in SeqNo=4 L:77 M:320 E: (1) Wrong Nucleic Acid Designator, NUMBER OF INVALID KEYS:3 L:77 M:252 E: No. of Seq. differs, <211> LENGTH:Input:158 Found:98 SEQ: L:88 M:254 E: No. of Bases conflict, LENGTH:Input:0 Counted:60 SEQ:5 L:89 M:334 W: (2) Invalid Amino Acid in Coding Region, NUMBER OF INVALID KEYS:6 L:90 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:5 -M:254 Repeated in SeqNo=5 L:90 M:320 E: (1) Wrong Nucleic Acid Designator, NUMBER OF INVALID KEYS:3 L:90 M:252 E: No. of Seq. differs, <211> LENGTH:Input:158 Found:98 SEQ:5 L:101 M:334 W: (2) Invalid Amino Acid in Coding Region, NUMBER OF INVALID KEYS:76 L:102 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:6 L:102 M:301 E: (44) No Sequence Data was Shown, SEQ ID:6 L:102 M:252 E: No. of Seq. differs, <211> LENGTH:Input:65 Found:0 SEQ:6 L:113 M:334 W: (2) Invalid Amino Acid in Coding Region, NUMBER OF INVALO KEYS:7 L:114 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:7 -L:114 M:301 E: (44) No Sequence Data was Shown, SEQ ID:7 / L:114 M:252 E: No. of Seq. differs, <211> LENGTH:Input:65 Found:0 SEQ:7